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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,497

06/09/2006

Hirofumi Higashi

DK-US065113

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EXAMINER

STIMPert, PHILIP EARL

ART UNIT

PAPER NUMBER

3746

MAIL DATE

DELIVERY MODE

07/06/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,497	Applicant(s) HIGASHI, HIROFUMI	
	Examiner Philip Stimpert	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 June 2010 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,592,346 to Bushnell (Bushnell) in view of US patent 4,172,465 to Dashner (Dashner) and US PGPub 2002/0012696 to Kouno et al. (Kouno).

4. Regarding claim 1, Bushnell teaches a compressor (10) comprising a compression mechanism (see Fig. 2) configured to compress fluid and including a discharge port (42) and a reed valve (44). Bushnell teaches that the reed valve (44) is coupled to the compressor mechanism to open and close the discharge port (42) and that it includes a flat part and a rounded protruding part (see Fig. 5, protruding part

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extends into the discharge port 42 when the valve is closed, and the flat part is the rest of the valve body). Bushnell does not teach the area relation required by claim 1.

Dashner teaches a check valve similar in effect to the reed valve of Bushnell. Dashner particularly teaches that "the housing of the check valve of the present invention is specially formed to provide smooth, generally constant fluid flow path therethrough to reduce substantially pressure loss of the fluid as it passes through the valve," (col. 2, ln. 41-46), and that this is accomplished by maintaining a constant cross-sectional area through the flow path of the valve. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reed valve and valve seat of Bushnell such that the cross-sectional area of the flow path through the valve remains constant, to thereby reduce pressure loss and increase efficiency as taught by Dashner. The examiner notes that it is possible for all three recited areas to be equal and still satisfy the limitations of the claim, since the relation used is "greater than or equal to." Further, Dashner teaches that the valve seat (20) decreases in radius from the outlet to the inlet. Since this is part of the geometry which provides the desired constant cross-sectional area, it would be provided to the discharge port (42) of Bushnell in a combination with Dashner. Further, Dashner teaches that the protruding part is tapered toward a distal end thereof, and that it essentially matches the profile of the valve seat, in terms of slope, at the point of contact.

Neither Dashner nor Bushnell teach that an end face of the protruding part is substantially flush with a rim of the inlet of the discharge port. Kouno teaches a compressor having a discharge valve. In particular, Kouno teaches discharge valve

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bodies which are substantially flush with the inlets to the discharge ports (see Fig. 6(c)). Kouno teaches that this minimizes clearance and thus dead volume in the compression chamber, thereby improving performance of the compressor (paragraph 81). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the valve body and discharge port of Bushnell and Dashner such that it is substantially flush with the rim of the inlet to the discharge port, so as to improve performance. Finally, the valve bodies taught by Dashner and in particular Kouno, are of substantially the same shape as the seats with which they come into contact to close the valves.

5. Regarding claim 3, Bushnell teaches a seat (56) formed at the outer periphery of the outlet of the discharge port such that the seat (56) contacts the flat part (see Fig. 6).

Response to Arguments

6. Applicant's arguments, filed 8 June 2010 with respect to claims 1 and 3 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Philip Stimpert whose telephone number is (571)270-1890. The examiner can normally be reached on Mon-Fri 7:30AM-4:00PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

/P. S./
Examiner, Art Unit 3746
1 July 2010